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ABSTRACT

This monograph discusses the importance of maps and mapping techniques for students in elementary and secondary school geography classes. Maps are interpreted to include plotter print outs, space and aerial photographs, plastic three-dimensional relief models, spatial images on cathode ray tubes, and holographs (images produced by laser beams). The author suggests that the geographic learning process should begin with skill-centered techniques rather than knowledge-centered techniques because, among other reasons, students can more easily understand a three dimensional world before they are able to interpret a more abstract representation of it. Also, because students generally enjoy the skill-related learning activities such as mapping, they are likely to be more highly motivated to study geography when these activities are stressed. Because maps are more abstract than most geographers and many educators realize, classroom teachers should first present maps to students on a horizontal plane (on the floor) rather than on a vertical plane (on the wall). Specifically, maps and map models should be set on the floor and oriented along the same lines of direction as the classroom. The students should be positioned along the southern periphery and should be facing the map. The importance of this positioning becomes evident later on when the vertical lines on a wall map will depict a north-south axis, and the horizontal lines will imply an east-west direction. After students have mastered maps, map models and symbols, and basic mapping techniques, teachers can use wall maps and projections. Teachers should, however, continue to review previous learning activities to assure students that the more abstract wall map on a vertical plane is actually representing the same phenomena which were demonstrated earlier on the horizontal plane. (DB)

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THE ROLE OF MAP INSTRUCTION FOR GEOGRAPHIC LEARNING

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The significance of the map in the classroom is very essential for the learning of geography. However, the map is far more abstract than most geographers and many educators realize. Too often, the map is introduced from the wall, which is on a vertical plane, instead of being presented first to the student on a horizontal plane.

Professional geographers must understand the need for simplicity when initially utilizing maps in the classroom. The instruction of geography must begin with skill-centered learning techniques before going on to the knowledge-centered ones.

THE ROLE OF MAP INSTRUCTION FOR GEOGRAPHIC LEARNING

Understanding the map is essential for a healthy geography program in the classroom. Unfortunately, so often map instruction begins with the more abstract map setting for the student. As a result, many students are receiving a very insecure preparation for more advanced aspects of this discipline. If a suitable method of map learning can be developed, geography will become the type of study that we wish for it to become.

Before I was educated as a professional geographer, I had acquired a fairly broad background in the other fields of science including psychology. As a geographer, I was interested in cartography and the understanding of maps. Also, during this time, I received training in the use of charts for nautical piloting and for celestial navigation. However, it has not been until the recent years as an educator with more than 15 years of classroom experience at the elementary and secondary levels of learning that I have become more aware of the need for using educational psychology for the improvement of geographic curriculum in the classroom.

The Report of the Commission on the Teaching of Geography in Schools was presented to members of the I. G. U. at the XVIIIth International Geographical Congress, held in Rio de Janiero, during 1956 -- nearly 25 years ago. This effort was the result of earlier concerns for geographic education which were expressed at the I. G. U. Congress held in Washington, D. C. in 1952, and at the UNESCO Conference on the Teaching of Geography, held at McDonald College, in Canada, during 1950.

According to the Commission's report, it was hoped that their study would encourage every country to train teachers of geography more effectively and provide better facilities for teaching geography. It was also assumed that this study would be used in conjunction with the UNESCO Handbook of Suggestions on the Teaching of Geography, which was published in 1951 and further revised in 1955. Readers were referred particularly to the chapters on the use of material aids and to book references which were listed at the end of that volume. In 1976, a meeting was held at Aix-en-Provence to review the initial draft of the new UNESCO Source Book on Geography Teaching, and the final is forthcoming.

In the twentieth statement of the Commission's report, there was a sentence that was very significant for geographic education. It said, "There is a big place for artistic display, for exhibitions, for dramatic work, and for map making as a means of expressing acquired knowledge and impressions in concrete and visible form."

Vernor Finch wrote several decades ago that, "The fundamental tool of the geographer is the map. An appreciation of the characteristics, uses, and limitations of maps is basic for any student of geography."

During the same time period, Preston James said, "The most important contributions of geography to the world's knowledge have come from an application of the technique of mapping distributions and of comparing and generalizing the patterns of distribution."

Richard Hartshorne stated, "It is no accident that geographers above all others should be concerned with maps. How otherwise can the geographer assemble the facts of spatial relationships for study?"

While we are all aware of the changing technology in the state of the art, i.e. computers, digital plotters, remote sensors, aerial and space photography, we may now be neglecting the map itself. Eventhough modern research may now be done more efficiently without conventional mapping techniques, an identity crisis has been caused for this discipline by the omission of the map in many research papers.

While sophisticated techniques have attempted to replace many aspects of mapping, geography as a school discipline has been witnessing heavy set backs in the classroom. For example, in the state of California, the evaluation of geographic education is no longer required. Therefore, it is being deleted as a learning priority from the school curriculum.

The teaching of geography in the schools may well be on its way towards becoming an endangered learning subject. So unless effective leadership by professional geographers is initiated to provide the classroom teacher with very pragmatic teaching techniques, geography will probably be removed entirely from the school curriculum.

The key tool for the understanding of geography is the map. Perhaps now the term "map" should include: plotter print outs, space and aerial photographs, plastic three dimensional relief models, spatial images on a cathode ray tube, and perhaps soon -- images produced by laser beams known as holographs.

If geography is to remain as an academic discipline, then the highest priority for instruction must be the understanding of the map and the need for the student to practice and use mapping techniques that are available for use in the classroom. It is not a question of what age is best for starting to teach these concepts and practices, but rather it is a question of whether or not such a program is going to be started for any age level.

We must begin the geographic learning process with skill-centered techniques rather than starting with knowledge-centered ones. Actually, we have a tremendous advantage over other disciplines because our skill-centered techniques can actually be fun.

A young child sees or perceives an three dimensional world before being able to interpret a more abstract representation of it. The youngster often enjoys playing with solid objects such as blocks which can be set on or besides each other or with components that can be fastened or attached together or placed in a meaningful pattern near or alongside one another. Out of doors, children enjoy playing on sand -- especially with moist sand near the shoreline or along a river bank. Without being aware of it, this was their initial introduction to geographical models. However, during their play, they viewed the primary phenomena from either a vertical or an obligue angle.

It has been observed that children who have not had the opportunity to play in this manner at an early age quite often have perceptual problems and therefore learning problems later on. In geography, learning must also begin in this "down to earth" position. The model should be set on the floor and it must be oriented along the same lines of direction as the classroom itself. The students should then be positioned along the "southern" periphery and they must be facing toward the map. This positioning will be very significant later on when the "veritcal" lines on a wall map will depict a north-south axis, and the "horizontal" lines will imply an east-west direction.

By starting on a flat horizontal plane surface at or near ground level, the student should almost instantly be able to visualize what "up" and "down" really represent. If possible, demonstrate that water will flow in any direction as long as it is downward. This concept becomes very confusing to teach with the use of a wall map along or on a vertical plane later on.

The use and recognition of several map symbols must be learned and associated with specific phenomena. Once these are learned, the symbols should be drawn and practiced as often as students are now required to print, write, or draw the numerals and letters or characters of their own language.

As we learned to read, we also learned to write. First, we were able to write words, then sentences, and finally compositions. The same is true of mapping. We can then teach the student to read a simple map, and soon he will be able to draw his own.

Depending upon the developmental level of the child's motor skills, it might be easier for the student to start with models and moveable components as symbols. Special textures of corresponding materials could be used to represent different hues or symbols for the blind and other visually handicapped students.

A series of international symbols similar to traffic signs and other basic designs should be considered for their simplistic characteristics as they would be viewed by a child rather than for the sophistication that might be perceived by a professional cartographer. With such an international "language" practice and review would be required often as would be the case for any other foreign language.

Later, the wall map and projections may be utilized. But it should be pointed out at this stage of learning that most games are played primarily on a horizontal plane with three dimensional objects. Chess is such an example. Children also enjoy constructing small objects along this same horizontal plane. It would be strongly advised to continue with as many activities as possible that relate to mapping along the horizontal plane -- especially during the initial period of learning basic skill-centered techniques.

Children -- and adults -- enjoy puzzels. Can you imagine how much fun a maze could be for a student if the same types of symbols used on a good map were also used on such a puzzel?

Eventhough the students may appear ready for the wall map and other similar projected images, it may also become necessary to review previous activities to assure the students that the more abstract wall map on a vertical plane is actually representing the same phenomena which ~~was~~ were demonstrated earlier on the horizontal plane. This can be easily accomplished by removing the wall map and placing it on the floor, then assemble your students along the southern periphery, facing towards the map. Afterwards, return it to the wall.

When the student is ready for the topographical map, try to obtain an identical set of plastic relief models and use them before introducing the flat topographic "sheets." Then, if possible, bring in an identical area topographical map for the students' use. This technique will simplify the students' understanding of one of the most abstract types of maps.

Give your students a series of simulated "trips" by using various modes of transportation to the same point of destination. Your students will find out that they will perceive each "trip" in a different perspective.

Arthur Robinson has expressed the the hope that the I. C. A. will someday establish a considerable amount of effort for the development of map-reading programs for the school curriculum as well as map-making programs. He has said that such a program is necessary for geography instruction.

What can and should be done by the I. G. U. and the I. C. A.?

First, the I. G. U. should develop a map reading program as a prerequisite for most geography in the school curriculum.

Second, the I. C. A. can provide the technology for developing the best map symbols for basic understanding on an international level. The psychological, aesthetic, and cartographic utilization of color should be decided by the experts -- the cartographers.

Third, the final decision to initiate this program should be made as soon as possible. I believe that the initial action will become very rewarding -- even within a relatively short period of time. If such a program is agreed upon and is also implemented, not only should positive evaluations be forthcoming, but hopefully geography will acquire a higher status than it has ever previously attained in the school curricula.

Finally, beyond this lies hope for a better understanding by all peoples of each region because the map will become an international language for understanding. Thank you.